

SECTION 603

INSTALLATION FOR HIGH DENSITY POLYETHYLENE PIPE

603.1 DESCRIPTION:

The work covered by this specification consists of furnishing all plant, labor, equipment, appliances and materials and performing all operations in connection with a large-diameter High Density Polyethylene (HDPE) pipe installation in accordance with the plans, specifications and special provisions.

For installation procedures of HDPE for sewer line construction, see Section 615.

For installation procedures of HDPE for storm drain construction, see Section 618.

HDPE pipe and fittings shall conform to Section 738.

This section covers large-diameter HDPE pipeline installations of gravity and low-pressure storm drain and sanitary sewer construction.

For the purpose of this specification, low-pressure is defined as the test pressures of 3.5 psi of air or 4 feet of water as specified in Section 615.10. — 615.11

For the purpose of this specification, large-diameter HDPE pipe shall include 8 inches through 120 inches nominal diameter.

603.2 EXCAVATION:

Excavation shall comply with Subsection 601.2. Trench widths shall comply with Subsection 601.2.2, Table 601-1 and Note (1) for HDPE pipe, meeting AASHTO M-252, and AASHTO M-294. Trench widths for profile HDPE pipe, meeting ASTM F-894, will be designed by the Engineer and included on the plans or in the special provisions.

603.3 PROTECTION OF EXISTING UTILITIES:

Protection of existing utilities shall comply with Subsection 601.3.

603.4 FOUNDATION, BEDDING, BACKFILLING AND COMPACTION:

603.4.1 Foundation: Foundation shall comply with Subsection 601.4.1.

603.4.2 Bedding: Coarse aggregate shall be used for bedding of large-diameter profile HDPE pipe. Coarse aggregate shall be in accordance with Subsection 603.4.6, for size, type, and gradation. For corrugated HDPE pipe as defined under Section 738, bedding shall meet the requirements of subsection 601.4.2 and Table 601-2 with the compaction requirements stipulated below.

Bedding material shall be carefully deposited in 8 inches or less loose lifts, thoroughly and carefully compacted around the pipe, equally around both sides of the pipe, with approved vibratory compactors or other tools or equipment when applicable, or by shovel slicing as approved by the Engineer. This shall be repeated until enough material is placed and compacted to provide a minimum of one (1) foot cover over the top of profile HDPE pipe, or to the top of corrugated HDPE pipe. Compaction densities, as well as further compaction requirements shall be as stipulated in Table 601-2, unless shown otherwise on the plans.

603.4.3 Backfilling: Backfilling shall comply with Subsection 601.4.3.

603.4.4 Compaction Densities: Compaction densities shall comply with Subsection 601.4.4.

603.4.5 Compaction Methods: For large-diameter HDPE pipe installations where the backfill and bedding material is coarse aggregate, mechanical compaction shall be the only method for consolidating backfill and bedding. Water consolidation shall not be used as a method of compaction for coarse aggregate whether used as a foundation, bedding or backfill material.

SECTION 738

HIGH DENSITY POLYETHYLENE PIPE & FITTINGS FOR STORM DRAIN & SANTARY SEWER

738.1 GENERAL:

This specification covers the requirements of profile-reinforced and corrugated (Type S or Type D) high density polyethylene (HDPE) pipe manufactured per ASTM F-894, AASHTO M-252 or AASHTO M-294 for gravity flow, low pressure storm drain and sanitary sewer systems. When noted on the plans or in the special provisions, gravity flow, low pressure storm drains and sanitary sewers may be constructed using HDPE pipe. The HDPE pipe will be of the sizes 8 inch diameter through 120 inch diameter. For the purpose of this specification, low pressure is defined as the test pressures of 3.5 psi of air or 4 feet of water as specified in Section 615.10. ~~615.10~~ 615.11

All pipe joints shall conform to the controlled pressure test of 10.8 psi of air or 25 feet of water as stipulated in ASTM D-3212.

The size and class of the HDPE pipe to be furnished shall be designed by the Engineer and shown on the plans or in the project specifications. At no time will the class designed be less than RSC-63 for profile pipe, or minimum equivalent Pipe Stiffness (PS) for corrugated pipe per the requirements of AASHTO M-252 or AASHTO M-294.

738.2 MATERIALS:

738.2.1 Base Material Composition: Profile pipe base material and fittings shall, in accordance with ASTM F-894, be made from a PE plastic compound meeting the requirements of Type III, Class C, Category 5, Grade P34 as defined in ASTM D-1248 and with established hydrostatic design basis (HDB) of not less than 1250 psi for water at 73.4 degrees F. as determined in accordance with Method ASTM D-2837. Materials meeting the requirements of cell classification PE 334433 C or higher cell classification, in accordance with ASTM D-3350 are also suitable. Corrugated pipe base material shall comply with the requirements of AASHTO M-252 (Type S) or AASHTO M-294 (Type S or D) and have a minimum cell classification PE 335420C.

738.2.2 Other Pipe Materials: Materials other than those specified under Base Materials shall comply with ASTM F-894, AASHTO M-252 or AASHTO M-294.

738.2.3 Gaskets: Rubber gaskets shall be manufactured from a natural rubber, synthetic elastomer or a blend of both and shall comply in all respects with the physical requirements in ASTM F-477.

738.2.4 Water Stops: Water stops shall be manufactured from a natural or synthetic rubber and shall conform to the requirements of ASTM C-923. The water stop shall have expansion rings, a tension band, or a take-up device used for mechanically compressing the water stop against the pipe.

738.2.5 Thermal Welding Material: The material used for thermally welding the pipe material shall be compatible with the base material.

738.2.6 Lubricant: The lubricant used for assembly shall comply to manufacturer's recommendations and have no detrimental effect on the gasket or pipe.

738.3 JOINING SYSTEMS:

738.3.1 Gasket Type: Joints for the piping system and fittings shall consist of an integrally formed bell and spigot gasketed joint. The joint shall be designed so that when assembled, the elastomeric gasket located on the spigot is compressed radially on the pipe or fitting bell to form a water tight seal. The joint shall be designed so to prevent displacement of the gasket from the joint during assembly and when in service. The elastomeric gasket shall meet the provision of ASTM F-477.

All pipe shall have a home mark on the spigot end to indicate proper penetration when the joint is made.

The bell and spigot configurations for the fittings shall be compatible to those used for the pipe.